Patent claims

1. A cell secreting the enantiomerically pure R-α-lipoic acid into a culture medium, characterized in that said cell overexpresses a lipoyl protein ligase B gene (*lipB* gene).

2. The cell as claimed in claim 1, characterized in that its expression of the lipoyl protein ligase B gene is increased by at least a factor of 2, preferably by at least a factor of 5, compared to a wild type cell from which said lipoyl protein ligase B gene has been isolated.

3. The cell as claimed in claim 1 or 2, characterized in that the lipoyl protein ligase B gene is a gene having the sequence SEQ ID NO: 1 or a functional variant of said gene.

4. The cell as claimed in any of claims 1 to 3, characterized in that it has an increased *lipB*-gene copy number or, preferably due to a suitable promoter, increased *lipB*-gene expression.

5. The cell as claimed in any of claims 1 to 4, characterized in that the lipoyl protein ligase B gene codes for a protein comprising the sequence ID NO: 2 or functional variants whose sequence homology to SEQ ID NO: 2 is more than 40%.

6. The cell as claimed in any of claims 1 to 5, characterized in that it is a microorganism such as, for example, a yeast or bacterial strain.

7. The cell as claimed in claim 6, characterized in that it is a bacterial strain of the family Enterobacteriaceae, very particularly preferably a strain of the species *Escherichia coli*.

8. A plasmid, characterized in that it contains a *lipB* gene under the functional control of a promoter.

9. A method for preparing a cell of the invention, characterized in that it comprises introducing a plasmid of the invention into a starting cell.

10. The method as claimed in claim 9, characterized in that the starting cell used is a cell of a prokaryotic or eukaryotic organism, which is capable of synthesizing R-α-lipoic acid, which is accessible to a recombinant method and which is culturable by fermentation.

11. A method for producing enantiomerically pure R-α-lipoic acid, which is characterized in that it comprises culturing a cell as claimed in any of claims 1 to 7 in a culture medium, said cell secreting enantiomerically pure R-α-lipoic acid in free form into the culture medium and said enantiomerically pure R-α-lipoic acid being removed from said culture medium.

12. The method as claimed in claim 11, characterized in that the enantiomerically pure R-α-lipoic acid is removed by centrifuging the culture medium followed by extracting or precipitating said R-α-lipoic acid.

13. The method as claimed in claim 11 or 12, characterized in that the cells are incubated in a minimal salt medium as culture medium under aerobic culturing conditions and within the range of the optimum growth temperature for the particular cells over a period of 16-150 h.